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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------|-------------|-----------------------|---------------------|------------------|
| 10/063,226 | 04/01/2002 | Eddy Benjamin Boskamp | 121063 | 9512 |
| 23413 | 7590 | 03/23/2005 | EXAMINER | |
| CANTOR COLBURN, LLP | | | ROY, BAISAKHI | |
| 55 GRIFFIN ROAD SOUTH | | | | |
| BLOOMFIELD, CT 06002 | | | ART UNIT | PAPER NUMBER |
| | | | 3737 | |

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|----------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/063,226 | BOSKAMP ET AL. |
| | Examiner | Art Unit |
| | Baisakhi Roy | 3737 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-26 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 06 June 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>4/8/02</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Drawings

1. The drawings are objected to because figures 5-8 lack clarity. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 26 is objected to because of the following informalities: number '26' is not present. Appropriate correction is required.

3. Claim 21 is objected to because of the following informalities: "4 individual coil" should be replaced with "8 individual coils". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 6, 7, 11, 13, 17, 18, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Misic et al. (5517120). Misic et al. disclose a magnetic resonance imaging method and system for neurovascular imaging with a multiple channel array coil with said multiple channel array coil having a cylindrically tapered head portion and chest portion each with a plurality of individual coil elements that are spaced apart from each other in a non-overlapping configuration (abstract, fig. 1-6, col. 2 lines 62-67, col. 3 lines 60-67, col. 4 lines 1-7 lines 14-43). Misic et al. further teach a hinge assembly to enable rotation of the chest portion (col. 3 lines 18-25 lines 57-59).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 8, 12, 14, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misic et al. in view of Jevtic (2002/0169374).

Regarding claims 3, 8, 14, 19, and 24, Misic et al. teach a non-overlapping coil system for neurovascular imaging but do not explicitly teach the use of transformer decoupling. In the same field of endeavor, Jevtic discloses a multiple channel array coil for magnetic resonance imaging without overlapping of the coil configuration with said individual coil elements isolated from next-nearest neighbor coil elements by transformer decoupling (abstract, [0073-0075]). It would have therefore been obvious to one of ordinary skill in the art to use the decoupling teaching by Jevtic to modify the teaching by Misic et al. for the purpose of performing isolations by decoupling nearest neighbor coils.

Regarding claim 12, Misic et al. do not explicitly teach applying said coil configuration for SENSE imaging. Jevtic teaches the application of said coil configuration for sensitivity encoding (SENSE) imaging techniques ([0023] [0081]). It would have therefore been obvious to one of ordinary skill in the art to use the SENSE imaging technique teaching by Jevtic to modify the teaching by Misic et al. for the purpose of generating better SNR over the region of interest.

8. Claims 4, 5, 9, 10, 15, 16, 20, 21, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misic et al. in view of Visser et al. (2002/0125888). Misic et al. teach a non-overlapping coil system for neurovascular imaging but do not explicitly teach the use of preamplifier decoupling and said array coil comprising 16 individual coil elements. Visser et al. disclose a method and apparatus for implementing sensitivity

encoding for MRI with the use of a multiple channel array coil having a cylindrically tapered head portion array coil to comprise of 8 individual coil elements ([0015] [0031] [0037-0041]). Visser et al. further teach using a preamplifier to isolate the next-nearest neighbor coil elements ([0031-0033]). It would have therefore been obvious to one of ordinary skill in the art to use the head coil configuration teaching by Visser et al. to modify the teaching by Misic et al. for the purpose of imaging employing a multiple channel array coil configuration to enable increased SNR.

9. Claims 1, 2, 4, 5, 11-13, 15-18, 20-23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez Ballester et al. (2004/0070394) in view of Visser et al. (2002/0125888). Gonzalez Ballester et al. disclose a whole body magnetic resonance imaging method and system with a magnet assembly to generate a magnetic field, apply gradient waveforms to the magnetic field, applying RF energy with a radio frequency transceiver system which further comprises a multiple channel array coil configured for sensitivity encoding imaging techniques (abstract, [0014-0015] [0018] [0021]). The reference teaches said multiple channel array coil to be configured into a cylindrical structure [0047] for imaging different regions of the body with said cylindrical structure comprising of a plurality of individual coil elements that are spaced apart from each other in a non-overlapping configuration [0053] [0068] [0071] [0074-0076] [0112] [0155] [0162]). Gonzalez Ballester et al. however do not explicitly teach said coil to have a cylindrically tapered head portion. In the same field of endeavor, Visser et al. disclose a method and apparatus for implementing sensitivity encoding for MRI with the use of a multiple channel array coil having a cylindrically tapered head portion (fig. 5, 6,

[0013-0017] [0031-0037]). Visser et al. further teach said array coil to comprise of 8 individual coil elements ([0015] [0031] [0037-0041]). Visser et al. teach using a preamplifier to isolate the next-nearest neighbor coil elements ([0031-0033]). It would have therefore been obvious to one of ordinary skill in the art to use the head coil configuration teaching by Visser et al. to modify the teaching by Gonzalez Ballester et al. for the purpose of imaging employing a multiple channel array coil configuration to enable increased SNR.

10. Claims 6, 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez Ballester et al. as set forth above, and further in view of Chan et al. (6577888). Gonzalez Ballester et al. disclose a whole body magnetic resonance imaging method and system with a multiple channel array coil configured for sensitivity encoding imaging techniques (abstract, [0014-0015] [0018] [0021]). The reference teaches said multiple channel array coil to be configured into a cylindrical structure [0047] for imaging different regions of the body with said cylindrical structure comprising of a plurality of individual coil elements that are spaced apart from each other in a non-overlapping configuration [0053] [0068] [0071] [0074-0076] [0112] [0155] [0162]). Gonzalez Ballester et al. however do not explicitly teach said coil to have a cylindrically tapered head portion. In the same field of endeavor, Visser et al. disclose a method and apparatus for implementing sensitivity encoding for MRI with the use of a multiple channel array coil having a cylindrically tapered head portion (fig. 5, 6, [0013-0017] [0031-0037]). Visser et al. further teach said array coil to comprise of 8 individual coil elements ([0015] [0031] [0037-0041]). Visser et al. teach using a preamplifier to

isolate the next-nearest neighbor coil elements ([0031-0033]). It would have therefore been obvious to one of ordinary skill in the art to use the head coil configuration teaching by Visser et al. to modify the teaching by Gonzalez Ballester et al. for the purpose of employing a multiple channel array coil configuration to enable increased SNR. Gonzalez Ballester et al. and Visser et al. do not explicitly teach a hinge assembly. In the same field of endeavor, Chan et al. disclose a cylindrically shaped head and chest coil assembly with a hinge mechanism or joint (col. 5 lines 17-40). It would have therefore been obvious to one of ordinary skill in the art to use the hinge assembly teaching by Chan et al. to modify the teaching by Gonzalez Ballester et al. and Visser et al. for the purpose of allowing movement of the anterior torso coil in the vertical direction and rotated in about the left-right axis.

11. Claims 3, 14, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez Ballester et al. in view of Visser et al. as set forth above, and further in view of Jevtic (2002/0169374). Gonzalez Ballester et al. and Visser et al. do not explicitly teach the use of transformer decoupling. In the same field of endeavor, Jevtic discloses a MRI method and system using multiple channel array coils with said individual coil elements isolated from next-nearest neighbor coil elements by transformer decoupling (abstract, [0073-0075]). It would have therefore been obvious to one of ordinary skill in the art to use the decoupling teaching by Jevtic to modify the teaching by Gonzalez Ballester et al. and Visser et al. for the purpose of performing isolations by decoupling nearest neighbor coils.

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez Ballester et al. in view of Visser et al. in view of Chan et al. as set forth above, and further in view of Jevtic. Gonzalez Ballester et al., Visser et al., and Chan et al. do not explicitly teach the use of transformer decoupling. In the same field of endeavor, Jevtic discloses a MRI method and system using multiple channel array coils with said individual coil elements isolated from next-nearest neighbor coil elements by transformer decoupling (abstract, [0073-0075]). It would have therefore been obvious to one of ordinary skill in the art to use the decoupling teaching by Jevtic to modify the teaching by Gonzalez Ballester et al., Visser et al., and Chan et al. for the purpose of performing isolations by decoupling nearest neighbor coils.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO 892 for relevant references of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baisakhi Roy whose telephone number is 571-272-7139. The examiner can normally be reached on M-F (7:30 a.m. - 4p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

B.R.

BR



BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700